UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,498	10/07/2003	Burkhard K. Neidecker-Lutz	13909-128001 / 2003P00162	8438

		EXAMINER
32864 7590 04/07/2006		DWIVEDI, MAHESH H

FISH & RICHARDSON, P.C.
PO BOX 1022
MINNEAPOLIS, MN 55440-1022

ART UNIT	PAPER NUMBER
2168	

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/679,498	NEIDECKER-LUTZ, BURKHARD K.
	Examiner	Art Unit
	Mahesh H. Dwivedi	2168

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>07 October 2003</u>.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-20* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) *1-20* is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on <u>07 October 2003</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____.
      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>05/17/2004</u>.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1.   The information disclosure statements (IDS) submitted on 05/17/2004,

02/14/2005, and 09/01/2005 have been received, entered into the record, and

considered. The submission is in compliance with the provisions of 37 CFR 1.97.

Accordingly, the information disclosure statements are being considered by the

examiner.

Claim Objections

2.   Claim 15 is objected to because of the following informalities: The applicant is

reminded that all claims must end with a period. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public
>
> use or on sale in this country, more than one year prior to the date of application for patent in the United
>
> States.

4.   Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by **Carey**

et al. (Article entitled "On Saying "Enough Already!" in SQL" Proceedings of the 1997

ACM SIGMOD International Conference on Management of Data, Tucson, Arizona,

United States, Vol. 26, No. 2, June 1997, pp. 219-230, XP00730509).

5.   Regarding claim 1, **Carey** teaches a system comprising:

A) a data store that includes a collection of data (Pages 219-220);

B) a sorted result buffer (Pages 219-220); and

C) a query interface operable to receive a limit and order query and to identify data in

the data store that satisfies the limit and order query using the sorted result buffer

(Pages 219-220).

The examiner notes that **Carey** teaches a **"collection of data"** as "its impact on

the query optimization and run-time execution components of a relational DBMS"

(Abstract). The examiner further notes that **Carey** teaches **"a query interface**

operable to receive a limit and order query and to identify data in the data store

that satisfies the limit and order query using the sorted result buffer" as "the

specification of a cardinality limit for a query can be supported by extending the syntax

of SQL's SELECT statement" (Page 219). The examiner further notes that it is common

knowledge that SQL operations use buffers for sorting purposes.

Regarding claim 2, Carey further teaches a system comprising:

A) wherein the data store is a database or a fast cache (Pages 219-220).

Regarding claim 3, Carey further teaches a system comprising:

A) wherein the collection of data includes a table having an attribute (Pages 220, 222);

and

B) the query interface is operable to receive the limit and order query placing order constraints on the attribute (Pages 219-220).

The examiner notes that **Carey** teaches **"wherein the collection of data includes a table having an attribute"** as "consider the following database for managing a company's employees, departments, and employees' travel expense accounts (TEA's)" (Page 222), and **"the query interface is operable to receive the limit and order query placing order constraints on the attribute"** as "order by distance" (Page 220).

Regarding claim 4, **Carey** further teaches a system comprising:

A) wherein the query interface creates a revised sorted result buffer in response to a modification of the limit and order query, the modification being made during a pause in execution of the limit and order query (Pages 219-221).

The examiner notes that Carey teaches **"wherein the query interface creates a revised sorted result buffer in response to a modification of the limit and order query, the modification being made during a pause in execution of the limit and order query"** as "Scan-Stop is a pipelined operator" (Page 221).

The examiner notes that it is common knowledge that the **"order by"** command in an SQL script sorts iteratively and modifies the terms of the query string with respect to the conditions of the initial query. The examiner further notes that it is common knowledge that pipelining produces results that are iteratively returned as they are produced instead of in a batch.

Regarding claim 5, **Carey** further teaches a system comprising:

A) wherein the sorted result buffer is stored in random access memory (Pages 219-220).

Regarding claim 6, **Carey** further teaches a system comprising:

A) wherein the query interface is operable to receive the limit and order query formulated using standard query language (SQL) (Pages 219-220).

Regarding claim 7, **Carey** further teaches a system comprising:

A) wherein the query interface is operable to receive the limit and order query that requests the first or last N records satisfying the query (Pages 219-221).

The examiner notes that Carey teaches **"wherein the query interface is operable to receive the limit and order query that requests the first or last N records satisfying the query"** as "the stop operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221).

Regarding claim 8, **Carey** further teaches a system comprising:

A) wherein the query interface is operable to identify data in the data store that satisfies the limit and order query using the sorted result buffer by iteratively reformulating the limit and order query until the sorted result buffer contains data satisfying the limit and order query (Pages 219-221).

The examiner notes that Carey teaches **"wherein the query interface is operable to identify data in the data store that satisfies the limit and order query using the sorted result buffer by iteratively reformulating the limit and order query until the sorted result buffer contains data satisfying the limit and order query"** as "Scan-Stop is a pipelined operator" (Page 221).

The examiner notes that it is common knowledge that the **"order by"** command in an SQL script sorts iteratively and modifies the terms of the query string with respect to the conditions of the initial query. The examiner further notes that it is common knowledge that pipelining produces results that are iteratively returned as they are produced instead of in a batch.

The examiner notes that it is common knowledge that **"order by"** command in an SQL script sorts iteratively and modifies the terms of the query string with respect to the conditions of the initial query. The examiner further notes that it is common knowledge that the **"order by"** command parses a specified database to return N specified entries in a specified order condition via comparison of entries amongst each other to satisfy the initial query.

Regarding claim 9, **Carey** teaches a method comprising:

A) receiving a limit and order query that includes both of an order criteria and a limit criteria (Pages 219-220);

B) the limit criteria specifying a maximum number of records for a result set of records satisfying the limit and order query (Pages 219-221);

C) filling a sorted result buffer with records from a data store (Pages 219-221); and

D) iteratively reformulating the limit and order query and updating the sorted result

buffer until the sorted result buffer contains the result set of records satisfying the limit

and order query (Pages 219-221).

Regarding claim 10, **Carey** further teaches a method comprising:

A) wherein the limit and order query is specified using standard query language (SQL)

(Pages 219-220).

Regarding claim 11, **Carey** further teaches a method comprising:

A) scanning the data store without consideration of the order criteria to identify records

otherwise satisfying the limit and order query (Pages 219-221); and

B) placing identified records into the sorted result buffer until the sorted result buffer

includes the maximum number of records specified by the limit criteria (Pages 219-221).

The examiner notes that "scan stop is a pipelined operator" (Page 221) is

analogous to an iterative process for acquiring specified query records recursively.

Regarding claim 12, **Carey** further teaches a method comprising:

A) wherein the limit and order query requests the first N records satisfying the query

(Pages 219-221), and further wherein reformulating the limit and order query includes:

B) identifying a last record of the sorted result buffer (Pages 219-221); and

reformulating the limit and order query to include a search criteria requesting records

occurring before the last record in the order specified by the order criteria (Pages 219-221).

The examiner notes that **Carey** teaches **"identifying a last record of the sorted result buffer"** as "the stop operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221).

Regarding claim 13, **Carey** further teaches a method comprising:

A) wherein the limit and order query requests the last N records satisfying the query (Pages 219-221), and further wherein reformulating the limit and order query includes:

B) identifying a first record of the sorted result buffer (Pages 219-221); and reformulating the limit and order query to include a search criteria requesting records occurring after the first record in the order specified by the order criteria (Pages 219-221).

The examiner notes that **Carey** teaches **"identifying a first record of the sorted result buffer"** as "the stop operator is a new logical query operator; it produces, in order, the top or bottom N tuples of its input stream" (Page 221).

Regarding claim 14, **Carey** teaches an apparatus comprising:

A) a first code segment for obtaining a desired data set from a data store by executing a query, the query designed to return a set of data records from the data store and including a limit condition and an order condition (Pages 219-220);

B) a second code segment for filling a sorted result buffer with the set of data records

(Pages 219-220);

C) a third code segment for pausing execution of the query (Pages 219-221);

D) a fourth code segment for modifying a threshold condition of the query, whereupon

the first code segment resumes execution of the query and the second code segment

filters the set of data records within the sorted result buffer based on the threshold

condition to obtain a filtered data set (Pages 219-222); and

E) a fifth code segment for determining that the filtered data set within the sorted result

buffer matches the desired data set (Pages 219-221).

Regarding claim 15, **Carey** further teaches an apparatus comprising:

A) wherein the threshold condition is based on a selected data record within the set of

data records (Pages 220, 222)

The examiner notes that **Carey** teaches **"wherein the threshold condition is**

based on a selected data record within the set of data records" as "consider the

following database for managing a company's employees, departments, and

employees' travel expense accounts (TEA's)" (Page 222).

Regarding claim 16, **Carey** further teaches an apparatus comprising:

A) wherein the threshold condition is related to a sort order associated with the desired

data set, such that the query returns data records having a pre-determined relationship.

to the selected data record with respect to the sort order (Pages 219-221).

Regarding claim 17, **Carey** further teaches an apparatus comprising:

A) wherein the second code segment fills the sorted result buffer by inserting a result of

the query and deleting the selected data record from the sorted result buffer (Pages

219-221).

Regarding claim 18, **Carey** further teaches an apparatus comprising:

A) wherein a size of the sorted result buffer remains constant and is determined based

on the limit condition (Pages 219-221).

Regarding claim 19, **Carey** further teaches an apparatus comprising:

A) wherein the first code segment executes the query be traversing rows of a data

table, and the third code segment pauses execution of the query at a first row

corresponding to the filling of the sorted result buffer (Pages 219-221).

Regarding claim 20, **Carey** further teaches an apparatus comprising:

A) wherein the first code segment resumes execution of the query, after modification

thereof, at a second row consecutively following the first row (Pages 219-221).

Conclusion

6.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

The examiner notes that in page 1 of section 12 in **Gietz**, pipelining is described

as "pipelining produces results that are iteratively returned as they are produced instead

of in a batch".

Article entitled "Oracle9i: Data Cartridge Developer's Guide" by **Gietz et al.**,

(June 2001). The subject matter disclosed therein is pertinent to that of claims 1-20

(Pipelining).

U.S. Patent 5,671,403 issued to **Shekita et al.** on 23 September 1997. The

subject matter disclosed therein is pertinent to that of claims 1-20 (e.g., methods to

iteratively attain query results).

Contact Information

7.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mahesh Dwivedi whose telephone number is (571) 272-

2731. The examiner can normally be reached on Monday to Friday 8:20 am – 4:40 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Tim Vo can be reached (571) 272-3642. The fax number for the

organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

Mahesh Dwivedi

Patent Examiner

Art Unit 2168

March 23, 2006

Leslie Wong

Primary Examiner